

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Arnaut et al.
Appl. No. : 10/510,401
Filed : May 12, 2005
For : METHOD AND COMPOSITION
FOR THE PREVENTION OR
RETARDING OF STALING OF
BAKERY PRODUCTS
Examiner : Badr, Hamid R.
Group Art Unit : 1794

DECLARATION UNDER 37 C.F.R. §1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Thierry Dauvrin, declare and state:

1. I am Senior Research Manager at Puratos, N.V., the assignee of the above-referenced patent application.
2. I am an expert in the field of enzymatic enhancement of bakery products. I have been head of the Research & Development Department of the Business Unit "Enzymes" of the Puratos Group for more than 10 years.
3. I am an inventor of 6 patents, have authored about 10 peer reviewed scientific papers and have given oral presentations at about 6 scientific meetings.

Appl. No. : 10/561,029
Filed : May 12, 2005

4. I am familiar with the above-referenced application, pending claims and current Office Action. I understand that the claims were rejected as allegedly being anticipated by Klingenberg et al. (DD 156 714 A), and as allegedly being obvious over Klingenberg et al. in view of various references (Oleson et al. – US 6,110,508; Terada et al. – US 5,124,161; and Chernoglazov et al. – RU 2,177,799 and Stetter – US 5,714,373). I have reviewed the pending claims and these references.

5. This Declaration is being submitted to demonstrate that the Klingenberg reference does not necessarily establish that the Thermitase described therein is added to the dough because enzymes which hydrolyze gluten can be added at other points in the preparation of baked products. This Declaration is also being submitted to demonstrate that it is unexpected that the claimed methods are able to retard staling.

6. Bread staling has been a problem for thousands of years, and is still responsible for huge economic losses to both the baking industry and the consumer. The causes of staling are complex, and remain largely unexplained. The present claims method relate to a method of preventing or retarding staling of bakery products during the baking process by adding at least one intermediate thermostable and/or thermostable serine protease to dough of a bakery product prior to baking.

7. Klingenberg et al. only discloses the use of a thermostable serine protease ("Thermitase") to break down gluten in the production of bakery products, but does not necessarily teach addition of Thermitase to dough prior to baking, or that the enzyme will have any effect on staling. This distinction is important, because as described below, the Thermitase could be used in the process of preparing a baked product without being added to the dough to be baked.

8. Enzymes which hydrolyze gluten are used at points other than addition to the dough prior to baking. For example, certain gluten hydrolysates were commercially available before the filing date of the present application. One such product is "Solpro 300", produced in Belgium, which is an enzymatically hydrolyzed wheat protein isolate obtained from (wheat)

Appl. No. : 10/561,029
Filed : May 12, 2005

gluten. It comprises 84% protein, less than 7% moisture, less than 1.5% ash and has a total fat content of 6%. It is prepared from wet wheat gluten to which two enzymes, an endoprotease and an alpha-amylase, have been added. The mixture is homogenized and heated to a temperature that causes the enzymes to react with the gluten. The reaction is stopped once the desired product is obtained. The pH of the product is then adjusted with lactic acid. The product is pasteurized, concentrated by evaporation, dried, ground and packaged. Generally, to stop the hydrolysis reaction, the enzyme is denatured (for example, by pasteurization), such that no more active enzyme remains in the commercialized gluten hydrolysate. Hydrolysed (wheat) gluten prepared by addition of proteases to gluten can be used to enrich flours used in making certain types of bakery products. Thus, although the enzyme is added to a bakery product (gluten, which is then added to flour), the protease is not added to the dough to be baked. In fact, after the procedure described above, the enzyme would be denatured, and therefore could not be present in the dough to be baked. The foregoing demonstrates that, a gluten hydrolyzing enzyme can be used in the process of preparing a baked product without necessarily being added to the dough to be baked.

9. Certain claims pending in the above-identified application recite "improvers." In the bakery industry, the term "improver" is well known to the skilled person and refers to a composition added to the dough to improve some aspects of the dough behavior and final bread quality.

10. It is unexpected that the claimed methods are able to retard staling. In particular, other enzymes which are able to hydrolyze gluten are not able to retard staling. For example, papain and thermolysin are thermostable proteases, both of which are known to hydrolyze gluten. Papain is a cysteine protease, and thermolysin is a metallopeptidase. In particular, papain is known to be very reactive towards gluten. However, neither of these enzymes exhibits an anti-staling effect when added to bakery products. Based on these findings, one would expect that other proteases would also not exhibit an anti-staling effect. However, the presently claimed method in which thermostable serine proteases are added to dough to be baked, unexpectedly results in an anti-staling effect. This effect is completely unexpected, and could not have been predicted based on Klingenberg et al. or any of the other cited references.

Appl. No. : 10/561,029
Filed : May 12, 2005

11. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information or belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful statements may jeopardize the validity of the application or any patent issued thereon.

By: Thierry Dauvin

Date: 2009/08/10

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